

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A method of detecting early stages of Alzheimer's pathogenesis in vitro or in a transgenic model, comprising:

detecting a disruption in normal cellular distribution of a G-protein receptor kinase [[[GRK)]]] 5 (GRK5).

Claim 2 (original): The method of Claim 1, wherein:

the disruption occurs in a prodromal stage of Alzheimer's disease.

Claim 3 (withdrawn): The method of Claim 1, wherein:

the disruption occurs in sub-cellular distribution of a GRK.

Claim 4 (canceled).

Claim 5 (withdrawn): The method of Claim 3, wherein:

the disruption comprises reduction in membrane-associated GRK.

Claim 6 (withdrawn): The method of Claim 1, wherein:

the disruption comprises increase in cytosolic GRK.

Claim 7 (original): The method of Claim 1, wherein:

the disruption is caused by a peptide.

Claim 8 (withdrawn): The method of Claim 7, wherein:

the peptide comprises  $\beta$ -amyloid.

Claim 9 (currently amended): The method of Claim ~~[[7]]~~ 34, wherein:

the peptide comprises soluble  $\beta$ -amyloid.

Claim 10 (original): The method of Claim 9, wherein:

the concentration of soluble  $\beta$ -amyloid is in a nM range.

Claim 11 (original): The method of Claim 9, wherein:

the concentration of soluble  $\beta$ -amyloid is in a range of about 50 nM  
- 500 nM.

Claim 12 (original): The method of Claim 1, wherein:

the detection step is carried out in brain cells.

Claim 13 (original): The method of Claim 12, wherein:

the brain cells comprise microglial cells.

Claim 14 (withdrawn): A method of detecting Alzheimer's pathogenesis, comprising:

detecting abnormal cellular accumulation of  $\beta$ -amyloid in a subject  
suspect of having Alzheimer's disease.

Claim 15 (withdrawn): The method of Claim 14, wherein:

the abnormal accumulation is in a range of about 50 nM - 500 nM.

Claim 16 (withdrawn): The method of Claim 15, wherein:

the  $\beta$ -amyloid comprises soluble  $\beta$ -amyloid.

Claim 17 (withdrawn): The method of Claim 14, wherein:

the detection step is carried out in brain cells.

Claim 18 (withdrawn): The method of Claim 17, wherein:

the brain cells comprise microglial cells.

Claim 19 (withdrawn): A method of inhibiting GRK-GPCR interaction in a cell, comprising:

pretreating a cell with a peptide.

Claim 20 (withdrawn): The method of Claim 19, wherein:

the peptide comprises  $\beta$ -amyloid.

Claim 21 (withdrawn): The method of Claim 19, wherein:

the peptide comprises soluble  $\beta$ -amyloid.

Claim 22 (withdrawn): The method of Claim 21, wherein:

the cell comprises a brain cell.

Claim 23 (withdrawn): The method of Claim 22, wherein:

the brain cell comprises a microglial cell.

Claim 24 (withdrawn): A method of inhibiting desensitization of GPCR in a cell, comprising:

pretreating a cell with a peptide.

Claim 25 (withdrawn): The method of Claim 23, wherein:

the peptide comprises  $\beta$ -amyloid.

Claim 26 (withdrawn): The method of Claim 23, wherein:

the peptide comprises soluble  $\beta$ -amyloid.

Claim 27 (withdrawn): The method of Claim 26, wherein:

the cell comprises a brain cell.

Claim 28 (withdrawn): The method of Claim 27, wherein:

the brain cell comprises a microglial cell.

Claim 29 (withdrawn): A method of preventing or suppressing Alzheimer's disease progression at prodromal or early stages, comprising:

correcting GRK dysfunction in cells.

Claim 30 (withdrawn): The method of Claim 29, wherein:

the GRK dysfunction is induced by  $\beta$ -amyloid.

Claim 31 (withdrawn): The method of Claim 30, wherein:

the  $\beta$ -amyloid comprises soluble  $\beta$ -amyloid.

Claim 32 (withdrawn): A method of correcting soluble  $\beta$ -amyloid induced GRK dysfunction in cells, comprising:

administering to a subject in need thereof a suitable amount of soluble  $\beta$ -amyloid antagonist.

Claim 33 (withdrawn): A vaccine comprising a  $\beta$ -amyloid analog for use as prophylaxis against  $\beta$ -amyloid induced reactions in a subject.

Claim 34 (new): A method of detecting a disruption in normal cellular distribution of a G-protein receptor kinase 5 (GRK5) by using a peptide.